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09/990,916	11/16/2001	Mark T. Feuerstraeter	42390P11857	3507

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EXAMINER	
CHUNG, JI YONG DAVID	
ART UNIT	**PAPER NUMBER**
2143	

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,916	FEUERSTRAETER ET AL.	
	Examiner	Art Unit	
	Ji-Yong D. Chung	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/27/2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 04/16/03
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

jpc

DETAILED ACTION

Information Disclosure Statement

1. The Examiner has considered the references listed on the Information Disclosure Statement, submitted on June 16, 2003 (see attached PTO-1449).

Claim Objections

2. Claims are objected to because of they contain spelling errors and minor inconsistencies in use of terms.

For example, claims 3 and 4 refer to "communications capability." Claims 7 and 9 refer to "communication capability."

In claim 11, "timeslicing" is not a word. It is used frequently throughout other claims.

Claim 17 mentions "a size" in line 2. It should be "the size." Article "the" is not only used where there is an antecedent basis.

In claims 26, 27 and 29, "switchably" is not a word. In any case, it does not make any sense in context of the claims.

In claim 26, use of "media access controller (MAC) types" is incorrect.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claim 13** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 refers to *parsing the physical channel comprises: timeslicing the physical channel into ten (10) timeslots, each associated with roughly a lGb/s communication rate.* A channel comprises a continuous stream of information; it cannot be possibly time sliced into ten timeslots. Its meaning is not clear.

Claim 13 will not be further examined on the merits; it is not possible to determine its meaning from language of the claim and the specification.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. **Claims 1, 3-6, and 16** are rejected under 35 U.S.C. 102(e) as being anticipated by Feuerstraeter.

With regard to **claim 1**, Feuerstraeter discloses the steps comprising:

identifying a communication capability of a remote device [auto-negotiation, lines 26-38, column 3]; and

dynamically generating a virtual channel within an Ethernet channel over a communication link between a communication interface and the remote device, wherein a data rate of the virtual channel is selected based, at least in part, on the identified communication capability of the remote device [lines 38-45, column 34].

With regard to **claim 3**, Feuerstraeter discloses identifying a communication capability of the remote device, comprising:

sending a capability request [see from line 51, column 11 to line 7, column 14]; and

receiving a response to the request denoting at least the communication capability of the remote device [see from line 51, column 11 to line 7, column 14. Also see Fig. 4]. There is an exchange of information about the transmission and reception capabilities.

With regard to **claim 4**, Feuerstraeter discloses identifying a communication capability of the remote device, comprising:

receiving an indication from the remote device denoting at least the communications capability of the remote device [see auto-negotiation, lines 51-65, column 11].

With regard to **claim 5**, Feuerstraeter teaches *"the indication" that also denotes a processing capability of the remote device.* The Next Page processing capability of Feuerstraeter is the processing capability of the remote device (see from line 66, column 12 to line 14, column 13)].

With regard to **claim 6**, Feuerstraeter teaches *that the communication capability of the remote device is obtained by the communication interface through a negotiation process.* [see auto-negotiation, from lines 51-65, column 11].

Claim 16 is software version of a claim whose limitations are broader than those in claims 1 and therefore, the reasons for the rejection of claim 1 applies to claim 16. Claim 16 is rejected for the same reasons as claim 9.

7. **Claim 2** is rejected under 35 U.S.C. 102(e) as being anticipated by US 20030058894 A1, to Feuerstraeter (Feuerstraeter_2, hereafter).

With regard to **claim 2**, it depends on claim 1. Feuerstraeter_2 teaches the a method according to claim 1,

identifying a communication capability of a remote device [paragraph 0044, which describes WAN and LAN detection, thus identifying the communication capability]; and

dynamically generating a virtual channel within an Ethernet channel over a communication link between a communication interface and the remote device, wherein a data

rate of the virtual channel is selected based, at least in part, on the identified communication capability of the remote device [the data rate is selected for either WAN or LAN in accordance with Feuerstraeter_2].

Feuerstraeter_2 also teaches the following limitation in claim 2:

wherein the communication link is an 802.3ae compliant communication link, with a data channel of 10Gb/s [see paragraph 0033, which indicates the disclosure applies to 802.3ae compliant devices. 802.3ae is about 10Gb/s].

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. **Claims 7, 8, 17 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Feuerstraeter_2, in view of Feuerstraeter.

With regard to **claim 7**, it depends on claim 1. See the above paragraph 7, for how Feuerstraeter_2 teaches the limitations of claim 1.

Feuerstraeter_2 teaches part of claim 7's limitations, how a link maybe established *based on the identified communication capability of the remote device*. Ferustraeter_2's subject matter is directed to tapping communication line at signal level to determine the communication speed of remote devices and to adjust his device's communication rate. Feuerstraeter_2 does not teach the step of *establishing a sub-10Gb/s virtual data channel* within a physical 10Gb/s data channels. Feuerstraeter_2's application speaks of a 10Gb channel and a sub 10 Gb channel.

What is missing from the Feuerstraeter_2, then, is a step for adjusting speed of one's communication device such that it transmits and receives below its capacity. Feuerstraeter teaches the missing step. Feuerstaeter teaches an auto-negotiation feature/step. Auto-negotiation feature/step allows devices to communicate at the highest available rate of a device below its maximum capacity.

The motivation for combining Feuerstraeter_2 and Feuerstraeter is given by the function of an auto-negotiation in any of network interface; auto-negotiation feature exists to adjust the transmission and reception rate of the interface to below its maximum, if the remote device cannot communicate as rapidly as the local one.

Note that Feuerstraeter_2's method for identifying the ability of remote device needs to be included in the combination in addition to Feuerstraeter's auto-negotiation step, because 802.3ae does not support auto-negotiation.

With regard to **claim 8**, Feuerstraeter_2 teaches:

identifying a processing capability of the remote device by the communication interface; and modifying a virtual channel data rate based, at least in part, on the identified processing

capability of the remote device. [See paragraphs 0037-0043. In Feuerstraeter_2, the data rate is selected for either WAN or LAN.

Claims 17 and 18 are software version of claims whose limitations are broader than those in claims 7 and 8 and therefore, the reasons for the rejections of claims 7 and 8 apply to claims 17 and 18. Claims 17 and 18 are rejected for the same reasons as claims 7 and 8.

10. **Claims 9-12, 19, and 21-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Feuerstraeter_2, in view of Feuerstraeter and further in view of "Comparison of Rate Control Methods," by Howard Frazier of Cisco (Frazier, hereafter), presented at IEEE 802.3ae 10Gb/s Task Force May 2000 Interim Meeting.

With regard to **claim 9**, neither Feuerstraeter nor Freustraeter_2 teaches its limitations. However Frazier discloses the limitations of claim 9:

parsing the physical channel into a plurality of timeslots based, at least in part, on the identified communication capability of the remote device; and *assigning one or more of the plurality of generated timeslots to carry substantive content as the virtual channel, while remaining timeslots do not carry substantive content.*

See page 9, where Frazier describes 802.3x based frame rate control. 802.3x flow control compliant devices have MACS to insert IDLE frames based on transmission and reception rates, each frame being the "timeslot." IDLE code generates no content over the channels.

The motivation for using 802.3x compliant device is given by Frazier, see page 3 titled "Why Do we Need Rate Control," which mentions that different payload rates for WAN/PHY and UniPHY require the pacing mechanism to establish compatibility.

With regard to **claim 10**, none of the references explicitly discloses that *substantive content is content associated with a communication session between the communication interface and the remote device*. However, note that any "substantive content" in network traffic involves at least two devices, with one transmitting substantive content to the other. It cannot be otherwise.

With regard to **claim 11**, none of the references explicitly discloses that parsing the physical channel comprises: *determining a fraction of the physical channel required to support the virtual channel; and timeslicing the physical channel into a number of timeslots, each timeslot corresponding to the fraction.* The steps are merely an application of 802.3x. Any implementation of 802.3x must calculate the number of IDLE frames ("timeslices") per second and thus "determine a fraction." One cannot dispense with the calculation.

With regard to **claim 12**, none of the references explicitly discloses that *parsing the physical channel comprises: timeslicing the physical channel into a predetermined number of timeslots*. In any frame-based pacing, MAC controls the rate of frame transmission for the physical channel, and thus "timeslices" the physical channel into a predetermined number of timeslots.

Claim 19 is a software version of claim whose limitations are broader than those in claims 9, and therefore, the reasons for the rejection of claim 9 applies to claim 19. Claim 19 is rejected for the same reasons as claim 9.

Claim 21 is an apparatus claim whose every limitation is broader than those of claim 9, except for the cited "control logic." The reasons for rejecting claim 9 would apply to claim 21 and would be rejected for the same reasons as claim 9, except that claim 21 cites a control logic for the MAC. Feuerstraeter shows a CPU bus and therefore teaches a "control logic" for the MAC. See Fig. 8. Therefore, claim 21 is rejected based on the reasons for rejecting claim 9 and also the fact that Freustraeter teaches the control logic.

Claim 22 is an apparatus claim. Other than control logic and auto-negotiation, each of its limitations is broader than those of claim 9. Therefore, except that claim 22 cites a control logic for the MAC and auto-negotiation, the reasons for rejecting claim 9 would apply to claim 22. The control logic has been discussed in reference to claim 21. As for auto-negotiation, Feuerstraeter shows the feature in lines 51-65, column 11.

Therefore, claim 22 is rejected based on the reasons for rejecting claim 9 and that Freustraeter teaches both the control logic and auto-negotiation.

Claim 23 is an apparatus claim that depends on claim 21 and cites that "the number of timeslots is predetermined." The limitation has been discussed with reference to claim 9.

Therefore, the reasons for rejecting claim 21 apply to claim 23. Claim 23 is rejected for the same reasons as claim 21.

Claim 24 is an apparatus claim that depends on claim 21 and cites "the MAC derives the number of timeslots required from the identified communication capability of the remote device." The limitation has been discussed above with reference to claim 9, where Frazier shows a MAC inserting the timeslots. See page 9 of Frazier. In 802.3x supporting devices, MACs compute the number of timeslots. Therefore, the reasons for rejecting claim 21 apply to claim 24. Claim 24 is rejected for the same reasons as claim 21.

Claim 25 is an apparatus claim that depends on claim 21 and cites that "the MAC is a 10Gb/s MAC." Frazier's MAC is 10Gb/s MAC. See the discussion of claim 9 above. Claim 25 is rejected for the same reason as claim 21 is rejected and, in addition, the fact that Frazier's MAC is 10 Gb/s MAC.

11. **Claims 14, 15, 20, and 26-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Feuerstraeter_2 and Feuerstraeter, and further in view of Hvostov et al. (Hvostov hereafter), "802.3ae 5 Criteria" (which was referenced by "Chair's Introductory Remarks" at IEEE 802.3 10Gb/s Task Force July 2000 Plenary Week, July 11-12, 2000) and "XAUI/XGXS Proposal" presentation at IEEE 802.3 10Gb/s Task Force May 2000 Interim Meeting Plenary Week, July 11-12, 2000.

With regard to **claim 14**, Feuerstraeter and Feuerstraeter_2 do not teach *having 1Gb/s MAC(s) or a 10 Gb/s MAC with which to establish the virtual channel; and dynamically multiplexing either the lGb/s MAC(s) or the 10Gb/s MAC to an appropriate one or more channel(s) of an attachment unit interface (AUl)*. Hvostov discloses in Fig. 1 multiple MACs with which to establish the virtual channel and dynamically multiplexing them. Note that Hvostov does not indicate the bandwidth of each MAC.

At this point, in order to make the prima facie argument that claim 14 should be rejected under 103(a), the Examiner must show (1) the motivation for combining the above references and (2) the reason why one would select 1Gb/s and 10 Gb/s MACs.

The motivation for combining Feuerstraeter and Feuerstraeter_2 has been given above with regard to claim 7. The motivation for incorporating Hvostov is that one of the criteria for formulating 802.3ae standard is the compatibility of 802.3ae with prior 802.3 conforming devices. Compatibility of 802.3ae to earlier 802.3 standards have been mentioned in the "802.3ae 5 Criteria", which was referenced by "Chair's Introductory Remarks" at IEEE 802.3 10Gb/s Task Force July 2000 Plenary Week, July 11-12, 2000. Hvostov provides means for setting many MACs at particular transmission and reception rate. By using many MACs, each MAC at a particular channel, would be able to provide virtual channel at a particular, desired bandwidth.

The reason for the selection of the size of bandwidth of 1Gb/s flow from further consideration of the compatibility question: what 802.3 compliant sub-10Gb/s data channel interface bandwidths are most commercially popular and would likely must co-exist (i.e., compatible) with to 802.3ae? It would have been obvious to one skilled in the art at the time of

the invention to choose 1Gb/s channels, because that is the next fastest IEEE 802.3 standard for Ethernet. If anyone were to upgrade their Ethernet interfaces, those would most likely be upgrading from bandwidths in multiple of 1Gb/s.

With regard to **claim 15**, "XAUI/XGXS Proposal" presentation at IEEE 802.3 10Gb/s Task Force May 2000 Interim Meeting Plenary Week, July 11-12, 2000 shows

at least four (4) 10Gb/s attachment unit interface (XAUI) channel(s), wherein content from up to two (2) lGb/s MAC(s) are selectively routed through each of the four XAUI channels such that each XAUI channel supports virtual channels of lGb/s resolution. See pages 7 and 15. The presentation at IEEE Meeting illustrates 16 wires, or 2 sets of 4 differential pairs to support 10 Gb/s. Therefore, each lane supports 2.5Gb/s. In order to feed the XAUI, with 1Gb/S MAC's, one would need up to two 1Gb/s MACs to be routed to each of them. Routing 3 MACs would exceed lane capacity, and routing 1 would not fully utilize it.

Claim 20 is a software version of claim whose limitations are broader than those in claims 14, and therefore, the reasons for the rejection of claim 14 apply to claim 20. Claim 20 is rejected for the same reasons as claim 14.

With regard to **claims 26-29**, each of their limitations has been discussed in reference to claims 14, 15, and 20. Note that claim 27's limitation on 2.5Gb/s channel has been addressed in the discussion of claim 15.

The reasons for the rejections of claims 14, 15, and 20 therefore apply claims 26-29. Claims 26-29 are rejected for the same reasons as claims 14, 15, and 20.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ji-Yong D. Chung whose telephone number is (571) 272-7988. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Patent Examiner
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PRIMARY EXAMINER

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